Climatology of Near-Storm Environments with Convective Modes for Significant Severe Thunderstorms in the Contiguous United States

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A sample of more than 17,000 significant severe thunderstorms, defined as F2+/EF2+ tornadoes, hail > 2 inch diameter, and convective wind gusts > 65 kt, was created for the period 2003-2009 across the continental United States, per a companion paper. Associated near-storm environment information, derived from the SPC hourly mesoanalysis grids, will be generated for each severe storm event. The distributions of the environmental parameters, many of which are measures of vertical wind shear and buoyancy, will be compared across categories of convective mode for each event type, and amongst the different event types. Such comparisons will consist of environmental parameters associated with the three forms of right-moving supercells (discrete, cluster, and line), supercell tornadoes to Quasi-Linear Convective System (QLCS) tornadoes, significant hail to tornadoes, and significant wind to both hail and tornadoes. The end goal of this work is to combine the environmental and convective mode information to assist in the diagnosis and forecasting